A Walking Tour of Rocks, Minerals and Building Stones of Spring Garden Road, Halifax

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Table of Contents

- Introduction
- Building Stones - Pieces of Earth History
- Building on the Past
- Geology and Human History of Spring Garden Road
- Walking Tour Stops

Back to Top

Introduction

Rocks used as building stones along Spring Garden Road tell an exciting story of the history of the earth's crust. These rocks vary in age and were quarried in many places in North America and Europe. The granite building stone from the Halifax, Shelburne and Queensport areas is approximately 370 million years old (m.y.o.). Most Nova Scotia quarried sandstone comes from Wallace and is 310 m.y.o. New Brunswick has provided 390 m.y.o. granite from St. George, and sandstone from Sackville (310 m.y.o.) and Mary's Point (320 m.y.o.). Much of the brick was produced with clay from Nova Scotia or New Brunswick. Other building Stones are from Ontario, Quebec, Alabama, Vermont, Scotland, Italy, Norway and Sweden.

This walking tour is one of many educational projects supported by the Public Information Program of the Canada-Nova Scotia Mineral Development Agreement (CNSMDA). The Public Information Program informs the public about Nova Scotia's geology and mineral resources and is one of five programs of the CNSMDA. These programs are designed to strengthen the Province's mineral industry.

Back to Top

Building Stones - Pieces of Earth History

A building stone, whether sedimentary, igneous or metamorphic, can reveal a great deal of information about its geological history. Sedimentary rocks, such as sandstone and mudstone, have been formed by the deposition of particles layer upon layer. Structures which result from this layering, such as bedding and channels, are sometimes visible on building stones. If the sandstone is composed of very small particles (fine sand grains), this indicates that they were deposited by sluggish, slow-moving currents which allowed such small particles to settle out of the water. Limestone is another type of sedimentary rock; it is produced by precipitation of calcium carbonate and sometimes contains the fossilized remains of coral, snails and other shells. Fossils such as those visible in rocks on the Royal Bank Building and Memorial Library indicate that the limestone was deposited in warm, shallow seas.

Igneous rocks such as granite, gabbro, syenite and anorthosite have formed by the cooling and solidification of hot molten material (magma). Individual mineral crystals such as quartz, feldspar and mica are easily identified on the polished granite surface of a building stone. If the crystals are large we can deduce that the magma cooled slowly, allowing adequate time for large crystals to form. Conversely, small crystals indicate a short period of cooling.

Metamorphic rocks such as marble, quartzite and ironstone have been changed (metamorphosed) by extremes of heat and pressure. Under pressure, original features in these rocks are often deformed or partially destroyed. The degree of deformation reflects the degree of pressure that the rock has experienced. The rocks underlying the Halifax area were altered by the heat of molten granite more than 370 m.y. ago. This thermal metamorphism in the rocks can be identified by the numerous small pits on their surface - these pits result from the weathering-out of minerals which were formed by the heat of the nearby granite intrusion.

Back to Top

Building on the Past

The building stone industry of Nova Scotia has had a very successful past. In 1911, four Wallace quarries produced about 9000 t (10,000 tons) of sandstone which was used entirely as building stone. This olive to tan sandstone was widely used in buildings throughout the Maritimes, Ontario, Quebec, and the United States - mostly New York, Boston and Providence. In 1910, over 3500 t (approx. 4,000 tons) of granite were extracted from granite quarries around Purcells Cove - one of five former granite production sites in the Halifax area. Nova Scotia building stone is of excellent quality and durability; its high standard is comparable with that of European stone which has been imported for decorative use on Halifax buildings constructed in the last two or three decades.

At present, few building stone quarries operate in Nova Scotia but the restoration of local buildings, notably Province House, has sparked interest in many old quarries and the building stone industry. Studies funded by the Mineral Development Agreement through the Nova Scotia Department of Mines and Energy are presently being conducted to find areas with good building stone potential. This may influence the revival of inactive quarries and may initiate a resurgence in the building stone industry in Nova Scotia.

Back to Top

Geological and Human History of Spring Garden Road

Beneath the man-made concrete and asphalt of Spring Garden Road lies slate and siltstone bedrock - rock formed hundreds of millions of years before man. Over 450 million years of geological history have been imprinted in them, recording the story of the changing earth.

The slates began as mud - particles of pre-existing rocks which were transported by water and deposited in the deep water of an ancient ocean. The sediments were re-worked by ocean currents to produce a fine-grained mud which was then compacted over millions of years to produce shale. Approximately 400 million years ago, the shales were metamorphosed into slate by the heat and pressure of folding during the formation of the Appalachian Mountains. These folds can be seen at Chain Rock and Martello Tower in Point Pleasant Park. Recently, folds were exposed during excavations for the construction of the Park Lane Complex on Spring Garden Road.

The slates underlying the city of Halifax are part of the gold-bearing Meguma Group found in southern Nova Scotia. Gold was first discovered in these rocks in the 1860s. Today, the search for further gold resources is continued by geologists of the Department of Mines and Energy under the Mineral Development Agreement.

More recently, glaciers greatly changed the landscape. The last major ice age ended 10,000 years ago. Glaciers scraped and eroded large areas of land and deposited the loose material in new landforms. In some areas, the land was gouged and existing valleys deepened. Today in the Halifax area there is only about one metre (3 feet) of soil - the Public Gardens had to import soil to support its trees and shrubs. In other areas, glaciers deposited sand- to boulder-sized material (glacial till) and shaped it into hills called drumlins. Citadel Hill and Georges Island are both drumlins.

Artifacts which have been dated 10,600 years old suggest that after the retreat of the glaciers a nomadic people moved into what is now Nova Scotia. After the glaciers melted, a brook formed beside the hill now known as Citadel Hill. Freshwater River, as this brook was later named, began its course in the Commons, flowed through what is now the Public Gardens, crossed Spring Garden Road where it presently intersects South Park Street, ran across "Pleasant Street" (Barrington Street) and flowed into Halifax Harbour near Point Pleasant Park.

In the past, Freshwater River was a chief supply of water to the British naval fleet and to merchant ships. A brewery on Spring Garden Road obtained a constant supply of fresh water from springs which fed Freshwater River. A bridge spanning the brook on "Pleasant Street" was affectionately named the "Kissing Bridge" and was a perfect place for midnight strolls. Today, Freshwater River flows through underground pipes. All that remains of the brook's original course is Griffin's Pond, located in the Public Gardens.

Spring Garden Road was originally a residential area. At the turn of the century, stores and businesses began to move into the area, which gradually grew into the busy shopping area it is today. It was named by nostalgic Londoners who were reminded of the spring gardens they had seen in Britain. The Public Gardens, modelled after St. James Park in London, have existed since the 1830s. In 1848, several lots of land were leased from "the city fathers" to the Horticultural Society. the citizens of Halifax cultivated gardens on this land until 1874, when it was transferred to the Commissioner of the Common. The Public Gardens have

many varieties of shrubs and flowers from all over the world, appropriately reflecting the global distribution of building stone which Spring Garden buildings have to offer.

Back to Top

Walking Tour Stops

Stop 1. The Public Gardens, Spring Garden Road

Griffin's Pond is the only remains of "Freshwater River." The brook was once a water source for a brewery and for Her Majesty's ships in Halifax dockyard.

Stop 2. The Lord Nelson Hotel, 1515 South Park Street

Designed and built in 1928 by Canadian Pacific Railways; various additions completed between 1957 and 1978; main part of building composed of L. E. Shaw Brick from Lantz, Hants County, Nova Scotia; limestone trim; granite steps from Queensport, Guysborough County; only inlaid ceiling in Halifax: woodwork done by craftsmen from Italy.

The Lord Nelson Arcade, 5663-5675 Spring Garden Road

Completed in various stages between 1861 and 1978; composed mainly of brick from Chipman, New Brunswick, and L. E. Shaw brick from Lantz; coarse- and fine grained red granite (700 m.y.o.) from Balmoral, Scotland; polished slabs of blue-black gabbroic anorthosite, over one billion years old (b.y.o.), called "Norwegian Blue Pearl" covers Birks: imported from Larvik, Norway, same rock facing used on Birks on Barrington Street.

Stop 3. Halifax Insurance Building, 5670 Spring Garden Road

Built in 1966; mica schist makes up steps; mudstone, covers two large cubes on the steps; interior decorated with "White Carrara" marble, approximately 150 m.y.o., from near La Spezia, Italy.

Stop 4. Sovereign Building, 5512-5522 Spring Garden Road

Built in 1960; brick structure visible on sides; front of top floors covered by sandstone facing from Wallace; first floor front covered by red granite facing, probably "Imperial Red" (1.8 b.y.o.) from near Vastevik, Sweden.

Stop 5.Royal Bank Building, 5466 Spring Garden Road

Built in 1921 from brick and faced in 1965 with 10 cm (4 inch) thick slabs of limestone (about 420 m.y.o.) from Queenston, Ontario; fossils in limestone: pinkish crinoid stems, brachiopod shells and rugose corals; well defined bedding visible at front entrance. Grey granite of foundation and steps from Shelburne; architects of original building S. P. Dumaresq Architect., and of the addition, S. P. Dumaresq's son, J. Philip Dumaresq &

Associates.

Stop 6. Maritime Life Building (Halifax Business Academy) 5425-5435 Spring Garden Road

Built in 1954 on site of Halifax's first Baptist Church; tan sandstone seen in upper storeys is from Wallace; decorative carving above main doors: the effects of present day weathering can be seen by the peeling of the sandstone. Gabbro facing on first storey same as on Nova Scotia Trust Company Building - known as "Swedish Black" from Hagghult, Sweden; grey granite from Purcells Cove makes up steps; pink syenite (over 2 b.y.o.) on either side of steps and door probably from Scotstown, Quebec: feldspar crystals define a faint layering; interior of building decorated with marble called "Breccia Aurora" (less than 65 m.y.o.) from near Brescia, Italy: contains fossils of shellfish such as brachiopods and gastropods.

Wall along Spring Garden Road in front of Maritime Life Building

Quartzite from local sources; grey Purcells Cove granite caps walls.

Stop 7. Nova Scotia Trust Company, 5415 Spring Garden Road

Built in 1958 on site of former Board of Trade offices; designed by J. Philip Dumaresq & Associates; bulk of building composed of L. E. Shaw brick from Lantz; carved limestone facing called "Shadow Vein" quarried at Rockwood Bluff Quarry, Alabama (320 to 345 m.y.o.); gabbro facing called "Swedish Black" decorates first storey.

Stop 8. Halifax City Memorial Library, 5381 Spring Garden Road

Opened in 1951, reinforced concrete and steel structure with decorative veneer of limestone (420 m.y.o.) from Queenston, Ontario; many fossils visible in limestone: crinoid stems, rugose corals and brachiopods; grey granite of steps probably from Northwest Arm; granite in foundation resembles Shelburne granite.

Stop 9. Technical University of Nova Scotia (TUNS) - School of Architecture, 5410 Spring Garden Road

Built on former site of military drill shed; site originally owned by Province of Nova Scotia, but under conditions of British North America Act, land was transferred to Dominion of Canada during Confederation in 1867; shed destroyed in 1903 and after much debate, property was given to Nova Scotia Government to erect Technical College provided that mandatory military instruction was part of curriculum. School of Architecture built in 1908 constructed mainly of Nova Scotia brick with trimming, entrance and columns of Wallace sandstone; grey granite of steps probably from Northwest Arm.

Stop 10. Old Court House, 5250 Spring Garden Road

Located on former site of Governor's Field; presently houses the Provincial Court; centre portion opened in 1860; built by George Lang. Walls supported solely by blocks of pink sandstone from Mary's Point, New Brunswick; west wing opened in 1908: designed by Herbert E. Gates and built by Samuel Manners Brookfield, operator of granite quarry at Terence Bay. Brick structure supports the west side: tan sandstone exterior; sandstone of both wings from Lyall Quarries, Wallace, and grey granite foundation and step probably from Northwest Arm. Note the difference in weathering of rock: sandstone peels while granite only discolours.

Stop 11. St. Mary's Basilica

Approximately 32 m long, 20 m wide (160 ft. long, 66 ft. wide), possesses tallest granite spire in world at about 45 m (150 ft.). Construction of Basilica began in 1820 to replace old wooden church of St. Peter's (Halifax's first Roman Catholic church - built in 1784); design for cathedral chosen by Edmund Burke, archbishop at the time; opened Nov. 29, 1829. Original square, ironstone tower struck by lightning in 1867; replaced by granite spire and facade - construction of this and northern extension began 1869, finished 1876. Main section constructed of ironstone from Purcells Cove on Northwest Arm; sandstone strip around first floor and at corners from Wallace; grey granite from Dominion Quarry in Purcells Cove surrounds side windows and door; red granite of columns at main entrance is 700 m.y.o. and is from Rubislaw Quarry in Aberdeen, Scotland.

Stop 12. St. Mary's Glebe, 1508 Barrington Street

St. Mary's Parish office; built in 1891 on site of former St. Mary's Parish Hall which served as Archbishop's residence and a school; architects J. C. Dumaresq Architect. The Glebe is a solid structure of Nova Scotia brick; pale red sandstone trim from quarries in Sackville, New Brunswick; grey granite of foundation, steps and surrounding wall from Purcells Cove; two columns of red granite from St. George, New Brunswick, at Barrington Street entrance.

Stop 13. St. Paul's Cemetery, Barrington Street and Spring Garden Road

Principal burial ground for first Protestant settlers; grounds closed in 1844; Sebastopol or Welsford-Parker Monument: a memorial constructed by George Lang to commemorate two Nova Scotians who were killed during Crimean War; grey granite of foundation is from Northwest Arm; arch and lion carved from 13 t (almost 14 ton) block of sandstone from Albert Quarries, Marys Point, New Brunswick; restoration of lion to be completed in 1988.

Back to Top

Funding for this project is from the Public Information Program of the Canada-Nova Scotia Cooperation Agreement on Mineral Development.

A co-operative project between the Nova Scotia Museum, Department of Education and the Department of Natural Resources (formerly Mines and Energy).

Photography: Reg Morrison

Back to Top

Drawing: (Not presently available)

Front cover: St. Mary's Basilica has a granite facade and the tallest granite spire in the world at 45 m (150 ft.) high. The facade lacks detailed carving because granite is very hard and resistant. St. Mary's Glebe (right). Built in 1891 of brick, sandstone and local grey granite. The building has served as a school and the Archbishop's residence, and now houses the St. Mary's Parish office.

Back to Top

Photos: (Not presently available)

Spring Garden Road. In foreground, St. Paul's Cemetery (left), St. Mary's Basilica and Glebe (right).

Halifax City Memorial Library. The library was built on the former site of Grafton Park using some local grey granite and Queenston limestone.

Fossils in Queenston limestone. The crinoid stems, rugose corals and brachiopods indicate that the stone was formed in a warm, shallow sea.

Lord Nelson Hotel. Three different types of building stone were used in the construction of this building; limestone, granite and brick (man-made from clay found in the Province).

Facade of Old Court House. On the sandstone facade are carved three bearded heads and four lion's heads. Sandstone can be carved intricately due to its softness.

Excavation site for the Park Lane Complex. Folds in the slate bedrock were visible during the construction of the building. These folds of the Meguma Group slate result from mountain building over 400 m.y. ago.

Public Gardens, Griffin's Pond and its outlet, are the only remains of Freshwater River. Thousands of years ago, accumulating groundwater developed into this river, which now flows through underground pipes.

Back to Top

Map: (Not presently available)

Building Stones of Spring Garden Road

1. Main entrance to Public Gardens, corner Spring Garden Road and South Park Street
2. Lord Nelson Hotel, 1515 South Park Street, and Lord Nelson Arcade, 5663-5675 Spring Garden Road
3. Halifax Insurance Building, 5670 Spring Garden Road
4. Sovereign Building, 5512-5522 Spring Garden Road
5. Royal Bank Building, 5466 Spring Garden Road
6. Maritime Life Building and surrounding wall, 5425-5435 Spring Garden Road
7. Nova Scotia Trust Company, 5415 Spring Garden Road
8. Halifax City Memorial Library, 5381 Spring Garden Road
9. TUNS - School of Architecture, 5410 Spring Garden Road
10. Old Court House, 5250 Spring Garden Road
11. St. Mary's Basilica

12. St. Mary's Glebe, 1508 Barrington Street
13. St. Paul's Cemetery, corner Barrington Street and Spring Garden Road

Back to Top

Mineral Resources Branch Home Page Natural Resources Home Page

GOV T INDEX

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